# Measurements of Thermal Neutron Flux and Capture Induced Gamma Radiation Spectra behind and inside of Iron-Water Slabs and Comparison with Monte Carlo Results

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There is a strong interest in neutron and gamma induced radiation damage in nuclear reactor materials. In order to verify the origin of the high-energy part of the gamma-ray spectrum, recent simultaneous measurements of neutron and gamma energy spectra by means of a NE-213 scintillator inside and behind of various arrangements of iron and water slabs*) were supplemented by an HPGe detector behind the arrangements allowing high-resolution gamma measurements. As a result, the whole high-energy part (above 5 MeV) of the gamma ray spectrum could be ascribed to thermal neutron capture.

Consequently, as an extension of the experiment, special attention was payed to determine experimentally the thermal neutron fluence as the major source of high energy photons by means of an absolutely calibrated He-3 proportional counter and a fission chamber. The thermal neutron fluxes were measured behind (and sometimes inside of) the experimental arrangements. The experimental results were compared to Monte Carlo calculations in order to evaluate the accuracy of codes and nuclear data for that problem.

*) B. Boehmer et al., Verification of Monte Carlo Calculations by Means of Neutron and Gamma Fluence Spectra Measurements behind and inside of Iron-Water Configurations, another contribution submitted to this conference

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